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EVALUATION IN THE 4-H VEGETABLE GARDEN PROJECT MASSACHUSETTS, 1939*

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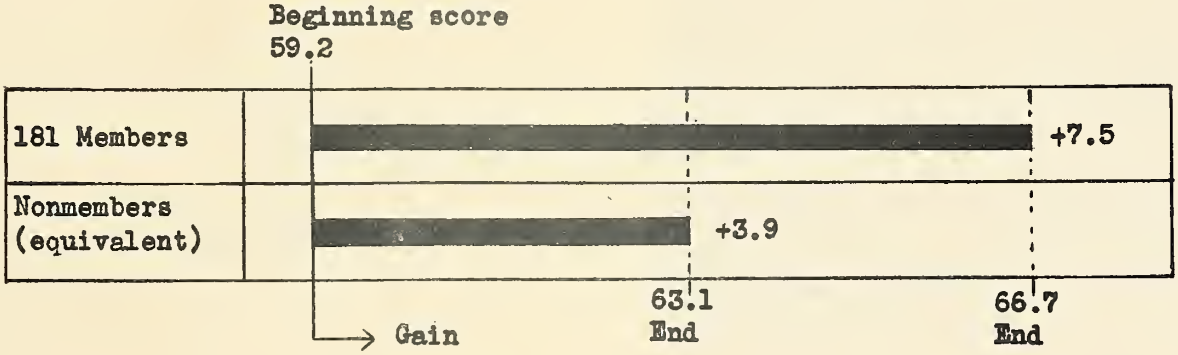
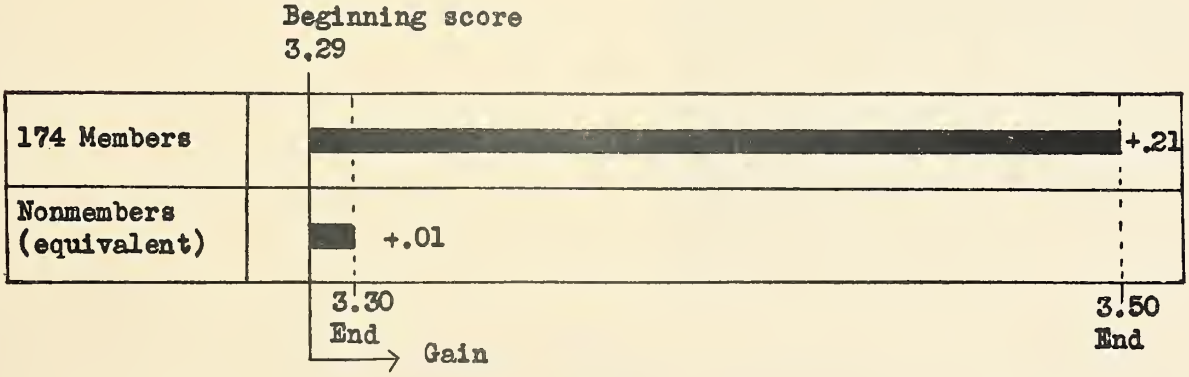


Growth in Vegetable Garden Information



Development of Self-Confidence

*First in the Series of Evaluation Studies in 4-H Club Work.

United States Department of Agriculture

Extension Service Circular 353. . . . . April 1941

HISTORICAL BACKGROUND OF THE STUDY

At the November 1935 convention of the Association of Land-Grant Colleges and Universities, the Executive Committee authorized the appointment of a special committee 1/ on the Influence of 4-H Club Work to study the educational influence of 4-H Club work upon the million rural boys and grils participating each year. This committee met in June 1936 and requested that the Federal Extension Service invite to Washington a group of experts in educational research to consider the problem and to make recommendations.

Under the leadership of Dr. W. W. Charters, director of the Bureau of Educational Research at Ohio State University, gratifying progress was made at the meeting of the advisory group 2/ in November 1936 in clarifying and unifying thinking regarding the possibilities of developing suitable ways and means of measuring the educational outcomes of 4-H Club work.

Upon recommendation of the committee to Director C. W. Warburton, a person trained in educational evaluation was added to the staff of the Federal Extension Service, to assist the States in adapting existing testing procedures to 4-H Club work and in devising new procedures for those 4-H objectives for which no tests have as yet been constructed.

With the appointment of Dr. Fred P. Frutchey to the Federal Extension Service, eleven cooperative evaluation studies have been instituted in five States - Arkansas, Iowa, Kentucky, Massachusetts, and Missouri. The first of these studies to be completed is that in the 4-H vegetable garden project in Massachusetts which is reported in this circular. The other studies will be reported as the analyses of results are completed.

If, as now seems probable, this first series of studies provides valid and reliable techniques for measuring the growth in knowledge of members resulting from their 4-H Club experiences, it is contemplated that further cooperative studies will be concerned with 4-H objectives in the realm of attitudes and skills.

Meredith C. Wilson
Chief
Division of Field Studies and Training.

1/ Directors W. A. Munson, Massachusetts; R. J. Baldwin, Michigan; and Harry L. Brown, Georgia; State 4-H Club Leaders T. T. Martin, Missouri, and W. J. Jernigan, Arkansas; Assistant State 4-H Club Leader Mrs. H. F. Johnson, South Carolina; and Meredith C. Wilson, Extension Service, U. S. Department of Agriculture.

2/ E. L. Austin, Rhode Island State College; W. W. Charters, Ohio State University; W. E. Garnett, Virginia Polytechnic Institute; Theo. W. H. Irion, University of Missouri; D. E. Lindstrom, University of Illinois; Barton Morgan, Iowa State College; J. L. O'Rourke, U. S. Civil Service Commission; and David Segel, U. S. Office of Education.

ACKNOWLEDGMENTS

The nature of this study involved the participation and assistance of many people. The authors are unable to express due appreciation in this report to the 4-H Club boys and girls, nonmembers, local leaders, school authorities, Federal and State specialists, and members of the Federal Extension 4-H Club Studies Committee (1940). [3] The helpful suggestions received in planning and conducting the study and in interpreting the results have brought the study to fruition.

The pioneering efforts and encouraging sponsorship of Director Willard A. Munson and State 4-H Club Leader George L. Farley of Massachusetts have been invaluable. The assistance and cooperation of County Extension Manager A. F. MacDougall at the beginning and during the study is appreciated.

The Land-Grant College Committee on the Influence of 4-H Club Work, under the chairmanship of Director R. J. Baldwin of Michigan, has been the overall influence in its concern for evaluation in 4-H Club work.

C. W. Warburton and C. B. Smith, former director and assistant director respectively of the Federal Extension Service, constantly urged a scientific approach to the measurement of the values of 4-H Club work to the boys and girls who participate. The series of evaluation studies under way is in a large measure due to this attitude.

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[3] Federal Extension 4-H Club Studies Committee (1940) Members: C. E. Potter, Gertrude L. Warren, Ray A. Turner, Madge J. Reese, E. H. Shinn, Fred P. Frutchey, and Barnard Joy, chairman.

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EVALUATION IN THE 4-H VEGETABLE GARDEN PROJECT
MASSACHUSETTS, 1939

SUMMARY OF THE STUDY

Purpose

The purpose of the study was to determine in a scientific manner the degree to which six 4-H educational objectives are being reached by the boys and girls who participate, and to try out methods for measuring achievement in these objectives.

The study was conducted in Middlesex County, Mass., in 1939 in the 4-H vegetable garden project. The 4-H Club work was conducted as usual in a very informal manner with an average of about one meeting per month and with most of the learning experiences provided through the stimulus of carrying on a project. No formal classes were held, although subject matter was discussed at club meetings and the members were given club bulletins.

Tests were constructed for each of the six objectives and were given to 181 members of the 4-H vegetable garden project and to 409 nonmembers (a check group) at the beginning of the project period in April and again 5 months later in September at the end of the project period.

Findings

1. The evaluation instruments developed were sufficiently sensitive to detect educational changes occurring in the participants in the relatively short period of 5 months and under the informal conditions of 4-H Club work.

2. The growth of the members from April to September in each of the six objectives was compared with the growth of an equivalent group of nonmembers. The groups were equated on their initial status in each objective; that is, the member group and the check group had the same starting point in each objective. The results indicated that the members reached the objectives to a greater degree than the nonmembers during the same period. In each of the six objectives the differences between the growth of members and that of the check group was in favor of the members.

3. In all cases the differences were statistically significant and in some cases exceedingly so; that is, if the study had been made many times with other samples of 4-H vegetable garden members and nonmembers in Middlesex County, the chances of the differences persisting in favor of the members were exceedingly great.

Distribution: A copy of this circular has been sent to each extension director; State leader and assistant State leader in county agricultural, home demonstration, and 4-H Club work; extension editor; vegetable garden specialist; agricultural-college library; and experiment-station library.

4. In some objectives there was evidence that 4-H Club work had a maintaining influence rather than an improving influence. Members decreased less than nonmembers; they upheld their initial status better than the nonmembers.

5. In the subject-matter knowledge objective, the members learned about twice as much information about vegetable gardening as the check group of nonmembers. The members gained 7.5 index points and the nonmembers 3.9 points. In view of the length of the project and the conditions of conducting 4-H Club work, the proportionate growth of the members over the nonmembers was considerable achievement, particularly in a type of activity which was a part of the life of the community in which both members and nonmembers live and to which both were exposed in their daily lives whether they were in 4-H Club work or not.

6. Members developed more self-confidence in their ability to plant and care for a vegetable garden than the check group of nonmembers. The members who completed their project increased 0.21 index points from the beginning to the end of the project period while the nonmembers increased but 0.01 index points.

7. Interestingly enough, the members who did not complete their project lost self-confidence. Members who completed increased 0.22 index points and members who did not complete decreased 0.41 index points. Both groups had been equated on their beginning index of confidence of 3.26 points and number of years in a vegetable garden project. The difference suggests that 4-H Club leaders in general should give serious consideration to the effect on the personality of the individual boy or girl when the question of completion arises.

8. The above word of caution is particularly significant when one realizes that the incomplete members learned as much vegetable garden information during the period of the project as the complete members did. The incomplete members gained 8.9 index points and the complete members gained 8.7 index points. Both groups were equated on their beginning index score in vegetable garden information and the number of years in 4-H Club work.

9. Members improved slightly in their attitude toward the effect on health of fruits and vegetables in the diet. The equivalent group of nonmembers dropped slightly. The difference between the two groups was not great. Since both groups had a highly favorable attitude at the beginning of the project period, very little gain would be expected.

10. The members as a group were eating more fruits and vegetables at the end of the project, and the check group of nonmembers were eating less. The difference was in favor of the members.

11. In desire to continue in school the members dropped slightly and the check group of nonmembers dropped still more. Younger boys and girls had a greater desire to continue in school than older boys and girls

as was shown by an inverse relationship of age and their desire to continue in school. As the boys and girls grew older during the project, a decrease in desire to continue in school was expected. It appears that the difference in decrease of the two groups can reasonably be attributed to a maintaining influence of 4-H Club work in contrast to an improving influence in other objectives.

12. The maintaining influence apparently was in evidence in the difference between the two groups in the change of definiteness of vocational plans. The members increased slightly while the equivalent nonmembers decreased considerably.

13. When the members began their project they knew more about some types of vegetable garden information than they did about other types. They knew relatively less about plant diseases and garden insects and their control than they did about other types of 4-H vegetable garden information. This situation was sensed by the 4-H Club staff several years ago when special literature on this type of information was prepared for the members. Incidentally the members gained more in this type of information than in any other during the period of the study.

14. Former members knew more about planting and caring for a vegetable garden than the present members did at the beginning of the study.

15. A larger proportion of the members than nonmembers contributed to the family winter food supply and the family income through their gardens.

PHILOSOPHY OF EVALUATION

Three Basic Assumptions

The studies of educational values of 4-H Club work rest upon three major assumptions: (1) That 4-H Club programs are educational programs and as such their purpose is to bring about desirable educational changes in the boys and girls who participate; learning is expected to take place through the experiences provided boys and girls in 4-H Clubs; (2) that the directions in which learning is expected are the desirable changes in attitudes, knowledge, skills, and problem solving, which are the objectives of 4-H Club programs; [4] (3) that studies of educational values of 4-H Club work are concerned with getting evidence of the degree to which the educational objectives or values are being attained.

Two Major Problems

Two major problems have been encountered in evaluation studies. The first problem is a clarification of the educational objectives of 4-H

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[4] Recommended Policies Governing 4-H Club Work. Report of the National Committee of the Land-Grant Colleges and the United States Department of Agriculture on 4-H Club Work. May 1935, page 6.
Proceedings of Advisory Committee on Measuring the Educational Outcomes of 4-H Club Work. November 1936.

Club work so that the directions in which boys and girls are expected to change as a result of their club experiences are clearly understood and so that the changes can be definitely identified when they occur. This is essentially a problem of program planning but becomes an evaluation problem when it has not been clearly done in planning the program.

The second major problem is that of devising methods for collecting and recording evidence of growth in the educational objectives. This becomes a problem because after the objectives have been clarified in terms of valid evidence of growth it is often found that the evidence is not practical to collect in light of the informality of the 4-H Club program and the time required. The development of practical, but at the same time valid, methods of evaluation is an important problem.

Four Guiding Principles

The guiding principles followed in selecting objectives to be studied are: (1) That since there is a wide variety of values indicated in the eight general objectives of 4-H Club work and in the outcomes attributed by former members to their 4-H Club experiences and since a relatively small amount of members' time can be obtained, it is necessary to limit the number of objectives selected for any one study; (2) the objectives chosen should be important objectives; (3) the early studies should include objectives for which there are well-established evaluation techniques; (4) as later studies are planned, other objectives, including the so-called "intangible" objectives, should be included.

On the basis of these principles the early studies are largely concerned with subject-matter knowledge acquired during the project, although tentative techniques for measuring other objectives have been included.

Plan of the Studies

The studies are planned and conducted on a cooperative basis. 4-H Club agents, subject-matter specialists, and research persons each have their contributions. Significant studies result from the pooling of the thoughts and efforts of these people. The studies involve measurements made at the beginning of the club project and again at the end on both members and nonmembers of 4-H Clubs, making possible a measurement of growth and a comparison of growth of members and nonmembers.

Because techniques of measurement are being applied in a new field and because there is a scarcity of appropriate evaluation materials, the studies being conducted are experimental in nature and represent pioneering efforts in an uncharted field. The first of these studies completed is a study of the growth of members in six objectives of the 4-H vegetable garden project in Massachusetts.

THE 4-H CLUB VEGETABLE GARDEN PROJECT IN MIDDLESEX COUNTY MASSACHUSETTS

The vegetable garden project is an important 4-H Club project in Massachusetts and particularly in Middlesex County. Vegetable gardening plays a significant role in the lives of the people of Middlesex County which adjoins the city of Boston and services the Boston market. It is a part of the culture of the county as much as raising beef cattle and growing wheat or corn is part of the way of life of certain western States or growing cotton in the South. Young people work in gardens during the summer, in their family's garden and in gardens of others. They are exposed to learning experiences in vegetable gardening whether or not they are 4-H Club members. The summer of 1939, however, was an unusual year in Massachusetts. It was reported to be the driest season since weather records were begun 126 years ago.

Enrollment

In 1939, 2,737 boys and girls were enrolled in vegetable garden projects in Massachusetts. Of this number, 835 or 30.5 percent were enrolled in Middlesex County, the largest county enrollment in the State. The enrollment in vegetable garden projects in this county is 20.5 percent of the total 4-H enrollment in the county; that is, about one-fifth of the projects in the county were vegetable garden projects.

Learning Experiences

Members of the vegetable garden project enrolled in the early spring and completed their projects in the fall. They were provided with a variety of informal learning experiences during this period. They took care of a garden of their own of at least 500 square feet and kept a record of all expenses such as seeds, fertilizer, tools, and so on. Members organized themselves into clubs and asked a local person, interested in young people and vegetable gardening, to be their local leader. The club held on the average of five meetings during the period of the project, at which time the members conducted the business of the club, received instruction on the subject matter of planting and caring for a vegetable garden, and participated in the social and recreational portion of the program. Each member received a 4-H Club bulletin and other instructional material on vegetable gardening prepared by members of the extension staff of the Massachusetts State College.

Each of the 80 clubs was visited at least once in 1939 by one of the county club agents. Each member was also visited at his home at which time the county club agent had an opportunity to look over the member's garden and offer encouraging suggestions and advice. The local leaders likewise visited the home of each local club member from one to three times during the season. The local leaders received subject-matter instruction at a leader-training meeting which was conducted by a member of the State college staff.

Members of each club exhibited their vegetables and saw the exhibits of others at the local achievement day meeting and at fairs. They had an opportunity to receive encouragement and experience in vegetable judging. Contests and awards were employed as incentives and were participated in by the members who desired.

Educational Objectives

These learning opportunities together with the exchange of experiences at meetings, which encourage members to seek out further experiences, are intended to bring about desirable educational changes on the part of members. It is conceivable that the variety of influences, direct and indirect, which the 4-H Club program affords, may bring about growth in many directions in an educational way. These are the educational objectives or outcomes of the program. In the present study six objectives were identified and methods for measuring were devised.

The subject-matter instruction received and the gardening experience should result in an increased knowledge about vegetable garden information. Actually carrying on a project involving the planting and caring for a vegetable garden may increase the member's confidence in that direction. Learning by doing increases self-confidence. Having a vegetable garden and studying about vegetable gardens may indirectly improve health attitudes and practices. Among these are the amount and variety of fruits and vegetables eaten and an improved attitude toward eating fruits and vegetables and their effect on health. Encouragement received in 4-H Club work, visits to the State college, and association with other members may create a desire to continue their formal education longer and may help to make their vocational goal more definite and positive. Informal conversations with members and former members show that they attribute these outcomes to their experiences in 4-H Clubs. The value of the latter objective is not so much that young people develop a permanent interest in a specific vocation but that they feel that they know somewhat definitely what they want to do for a living when they get older - that they have a goal in mind to work toward. The specific vocation they hope for may shift in their minds from time to time, but an enduring motivating value is wholesome from a developmental point of view.

These, then, are the educational objectives measured in this study: (1) Knowledge about vegetable gardening, (2) confidence in themselves in planting and caring for a vegetable garden, (3) desirable attitude toward eating fruits and vegetables and their effect on health, (4) desirable health practices relating to fruits and vegetables eaten, (5) desire to continue their formal education longer, and (6) more definite vocational goals.

CONDUCTING THE STUDY

Preparing the Questions

A practicable method of collecting and recording evidence of growth in these objectives was necessary. It was decided that questions should be prepared and that the answers to these questions would reflect achievement in the objectives. The questions would then be presented to the members and nonmembers in group and individual interviews and they would record their answers on the booklet. Hence, for each of the six objectives, test questions were prepared in cooperation with State and county 4-H Club agents, subject-matter specialists, and members of the Federal Extension staff.

To obtain a cross-section sample of 4-H vegetable garden information eight types were set out: (1) Location of the garden; (2) selection of seed; (3) preparation of the seedbed; (4) planting; (5) cultivating, thinning, and weeding; (6) plant diseases and their control; (7) garden insects and their control; and (8) marketing and exhibiting. These are the types of information treated in the literature of the 4-H vegetable garden program. Test questions, based on the 4-H Club vegetable garden literature, were prepared for each of these types and submitted to subject-matter specialists for comment and suggestions on the accuracy of subject matter and correctness of the answers. These questions together with those prepared for the other objectives were set up in an eight-page booklet and multilithed.

Collecting the Data

The questions were given to members and nonmembers of the 4-H Club vegetable garden project in Middlesex County both at the beginning of the project period in April 1939 and again at the end of the project period in September 1939. In this way growth in the six objectives during the project period was obtained for both members and nonmembers, and a comparison of the two groups on each objective was possible. Before and after data were collected on 181 members and 409 nonmembers, as well as 35 members who did not complete their project and 21 former members of a 4-H vegetable garden project. The individuals were contacted during school time through arrangements made with the school authorities, at 4-H Club meetings, and in home visits. Neither the member nor nonmember group was informed that the questions would be asked a second time at the close of the project.

THE RESULTS OF THE STUDY

General Information

Both groups were nearly equal in age. The member group was 12.1 years old as of their last birthday when reported at the beginning of the project. The average age of the nonmembers was 12.3 years. Both groups on the average were in the same grade in school. In selecting the two groups a conscious effort was made to obtain nonmembers of the same age and grade in school as the members. The members were making about normal progress in school, being only 0.03 years retarded. The nonmembers were slightly retarded in school - 0.29 years on the average, or about one-third of a year. That is to say they were slightly behind in school for their age.

The members were participating in a vegetable garden project on an average of 1.8 years, including the year in which this study was made. The nonmembers, of course, had never participated in a 4-H Club vegetable garden project. One hundred percent of the members, of course, were in some 4-H Club work during the year of this study. They had been in 4-H Club work an average of 2.4 years. Only 13.2 percent of the nonmembers were in 4-H Club work in the year of the study, and they had been in club work for an average of 1.6 years. About 44 percent of the members and about 22 percent of the nonmembers lived on farms.

The members knew more about 4-H Club vegetable garden subject matter than the nonmembers did at the beginning of the project period . The members' index score was 59.2 while the nonmembers' was 52.7. The members were somewhat more confident in their ability to plant and care for a vegetable garden. The members' index of confidence was 3.29 and the nonmembers' 3.12. Both groups had about an equally favorable attitude toward the effect on health of eating fruits and vegetables in the diet the members' index being 1.45 and the nonmembers' 1.43. At the beginning of the project the nonmembers reported eating more fruits and vegetables in their daily diets than the members did. The members' index was 3.05 while the average index of the nonmembers was 3.22. This amounts to about three fruits and vegetables (including potatoes) eaten daily.

Table 1. - General information concerning members and nonmembers.

General information	Members	Nonmembers 1/
Number of individuals	181	409
Average age (years)	12.1	12.3
Average grade in school	6.5	6.5
Average number of years retarded in school	-.03	-.29
Average number of years in a 4-H vegetable garden club	1.8	0.0
Average number of years in some 4-H Club	2.4	1.6
Percent who were in some 4-H Club in 1939	100.0	13.2
Percent living on farms	44.2	22.2
Average beginning index score on 4-H vegetable garden subject matter	59.2	52.7
Average beginning index on confidence	3.29	3.12
Average beginning index on food attitude	1.45	1.43
Average beginning index on food habits	3.05	3.22
Average beginning index on school plans	2.97	2.92
Average beginning index on vocational plans	3.03	2.94

1/ Nonmembers were individuals who never have been members of a 4-H vegetable garden project.

Desire to continue in school and definiteness of vocational plans are 4-H objectives which are not unique to a vegetable garden club but are probable outcomes of general experiences in 4-H Club work. Hence, in comparing members and nonmembers on change in school plans and vocational plans, the members were members of any 4-H Club during the period and the nonmembers were individuals who were not in any 4-H Club during the period. The average beginning index of the members on school plans was 2.97 and that of the nonmembers 2.92. An index of 3.00 corresponds to a desire to attend college for 2 years.

At the beginning, the members were a little more certain than the nonmembers of what they planned to do for a living. The members' beginning index was 3.03 and the nonmembers' 2.94. An index of 3.00 corresponds to having some idea of what they want to do for a living but of not being sure.

Experiences in Vegetable Gardening

All the members and most of the nonmembers had some experience in vegetable gardening during the period of the project. All the members and 73 percent of the nonmembers worked in a garden during the period of the project. All the members and 31 percent of the nonmembers had a garden of their own. Many individuals in both groups worked in their father's garden or in a garden for someone else.

Table 2. - Percentage of members and nonmembers having various types of experience in vegetable gardening during the period of the project - April 1939 to September 1939.

Vegetable garden experience during period of project - 1939	Percentage of Members	Percentage of Nonmembers
Had a garden of their own	100	31
Worked in their father's garden	44	42
Worked in a garden for someone else	24	39
Had at least one of the above three experiences	100	73
Learned about vegetable gardening from parents and friends	64	40
Studied about vegetable gardening in 4-H Club leaflets, extension bulletins, or U. S. Department of Agriculture bulletins	48	7
Studied about vegetable gardening in books and magazines	47	16
Heard garden talks or lectures	36	10
Read about vegetable gardening in newspapers	25	11
Had at least one of the above five experiences	88	49
Had at least one of the above eight experiences	100	80

Parents and friends were a major source of learning for both groups. Sixty four percent of the members and 40 percent of the nonmembers learned about vegetable gardening from parents and friends. Forty-eight percent of the members and only 7 percent of the nonmembers studied about vegetable gardening in 4-H Club leaflets, extension bulletins or U. S. Department of Agriculture bulletins.

From table 2 it was clear that the nonmember group was not a group without any experience in vegetable gardening during the period of the project. Eighty percent of the nonmembers had some experience in vegetable gardening.

Analysis of the Groups

To compare the growth of members and nonmembers it was necessary to have the two groups equivalent. All the factors on which data were available in the study were tested to determine which would be needed as controls to make the groups equivalent. The only significant control was the score at the beginning of the project - the measurement of that objective when the member enrolled in the project. Age, strangely enough, was not a factor significantly related to growth in the objective. Younger members made as much progress as older members, although it was found that older members tended to know more 4-H vegetable garden information at the beginning of the project than the younger members did. Grade in school, acceleration or retardation in school, and living on a farm or not living on a farm, added nothing to the control effect of the index score at the beginning of the project. When the member and nonmember groups were equated on their score at the beginning of the project, adding other factors did not increase the effectiveness of the control. The less the members knew about 4-H vegetable garden subject matter at the beginning of the project, the more they learned during the project.

Table 3. - Relationship between average beginning index score and average gain in each score grouping of subject-matter knowledge

Beginning score grouping	Beginning of project: Number of members	Beginning of project: Average score	Average gain during project
(1)	(2)	(3)	(4)
76 and above	30	82.4	2.0
44 to 75	118	61.1	7.3
43 and below	33	31.2	13.3

So that the gains of the two groups and the comparison of gains would not be conditioned by how much the groups knew about vegetable gardening at the beginning of the project, the member and nonmember groups were equated on their beginning index score.

Growth in Vegetable Garden Information

The members made an average gain of 7.5 points in vegetable garden information and the equivalent group of nonmembers 3.9 points, or about twice as much as the nonmembers. The average beginning index of both the member and the equivalent nonmember group was 59.2 points. At the end of the project the average index of the member group was 66.7 points and the nonmember group 63.1 points.

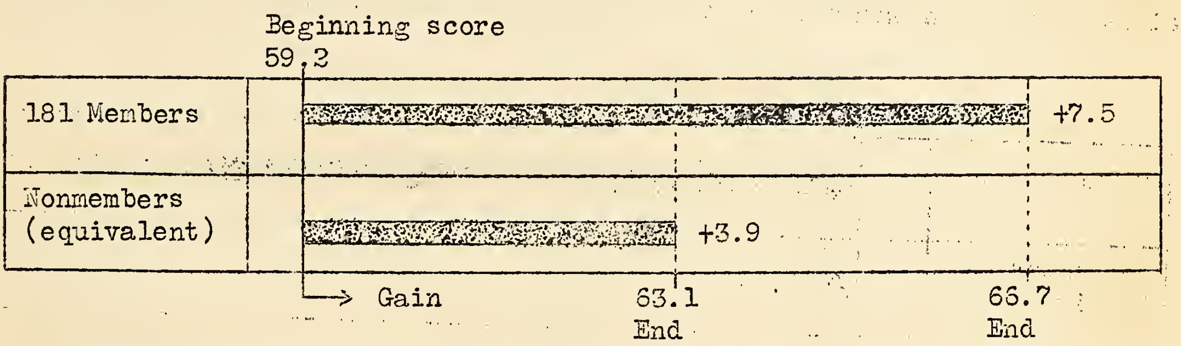


Figure 1. - Growth in subject-matter information

The difference in gain between the members and nonmembers was 3.6 points in favor of the members. The standard error of this difference was 0.74 points; and hence, the critical ratio was 4.9, showing that the difference was highly significant statistically. 5/

Table 4. - Comparison of members and equivalent nonmembers in subject-matter knowledge

Groups (1)	Number (2)	Average score: Beginning of project (3)	Average score: End of project (4)	Average gain (5)
Members	181	59.2	66.7	7.5
Nonmembers	181	59.2	63.1	3.9
Difference in gain of the two groups				3.6
Standard error of the difference				.74
Critical ratio - statistical significance of the difference				4.9

5/ Critical ratios given below show the chances that the difference was too great to be attributed to random fluctuations in sampling:

Critical Ratio	Chances in 100
2.00	97.7
2.50	99.4
3.00	99.9

Growth in Self-Confidence

The member group developed more self-confidence in their ability to plant and care for a vegetable garden than the equivalent group of nonmembers. The members made an average gain of 0.21 points and the nonmembers practically no gain, only 0.01 points. In this case the two groups were made equivalent on their index of self-confidence at the beginning of the project. Other factors did not add to the effectiveness of the control. The index of confidence of the members and the equivalent group of nonmembers at the beginning of the project was 3.29 points.

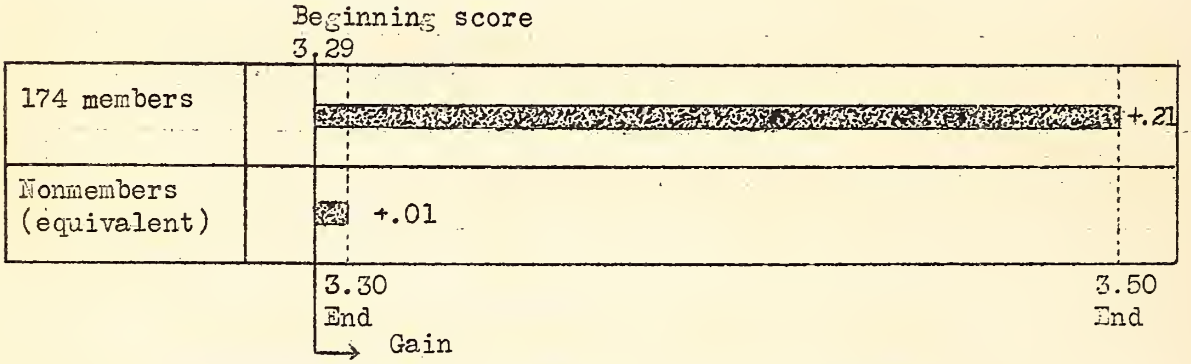
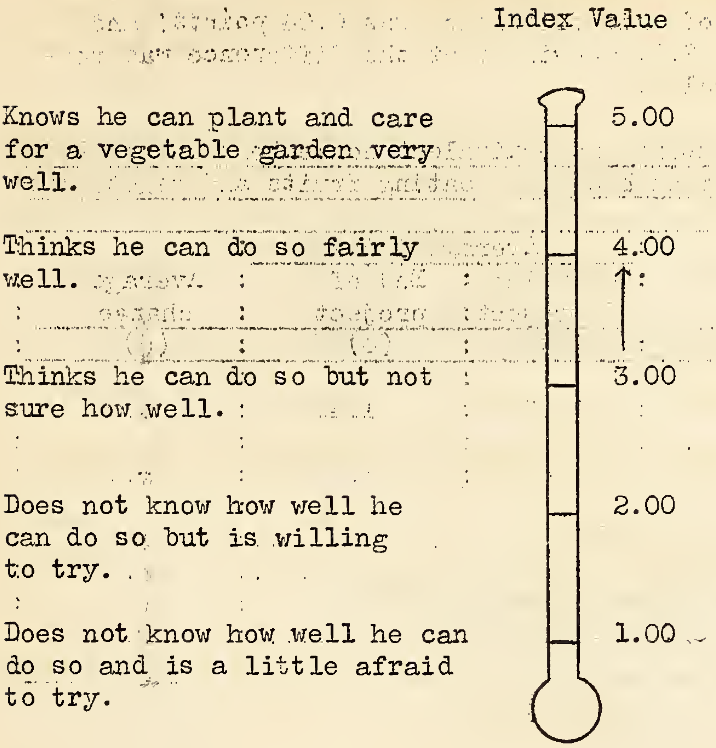


Figure 2. - Growth in self-confidence

The difference in gain in self-confidence was 0.20 points in favor of the members. The standard error of this difference was 0.07 points. Hence, the critical ratio was 2.9, showing that the difference was statistically significant.

Table 5. - Comparison of members and equivalent nonmembers in confidence in their ability to plant and care for a vegetable garden

Groups	Number	Average index		Average gain
		Beginning of project	End of project	
(1)	(2)	(3)	(4)	(5)
Members	174	3.29	3.50	0.21
Nonmembers	174	3.29	3.30	.01
Difference in gains of the two groups				.20
Standard error of the difference				.07
Critical ratio - statistical significance of the difference				2.9


Index Value
Knows he can plant and care for a vegetable garden very well.
Thinks he can do so fairly well.
Thinks he can do so but not sure how well.
Does not know how well he can do so but is willing to try.
Does not know how well he can do so and is a little afraid to try.
5.00
4.00
3.00
2.00
1.00

The gain of 0.21 points is equivalent to 21 percent of the members shifting 1.00 points on the scale of confidence, as from an index of 3.00 "thinking that they can plant and care for a vegetable garden but are not sure how well" to an index of 4.00 "thinking that they can do so fairly well."

The gain of 0.01 points is equivalent to 1 percent of the nonmembers doing likewise.

Change in Food Attitude

The members' attitude toward the effect on health of fruits and vegetables in the diet became slightly more favorable during the period of the project while the nonmembers' became slightly less favorable. The members shifted 0.04 points in the favorable direction and nonmembers 0.05 points in the opposite direction. In this case the two groups were made equivalent on their initial index of attitude. The initial index of attitude was 1.45 points for both the member group and the equivalent group of nonmembers. This represented a very favorable attitude toward the effect on health of fruits and vegetables in the diet. The index for the member group at the end of the project was 1.49 points and for the nonmember group 1.40 points.

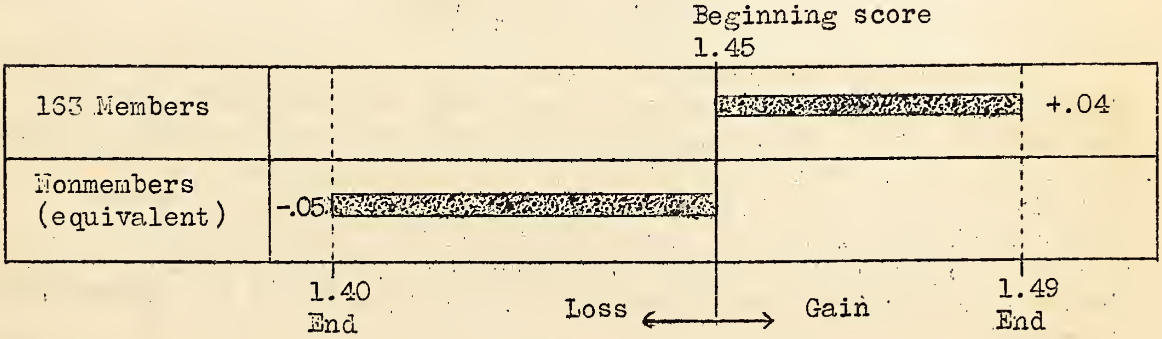
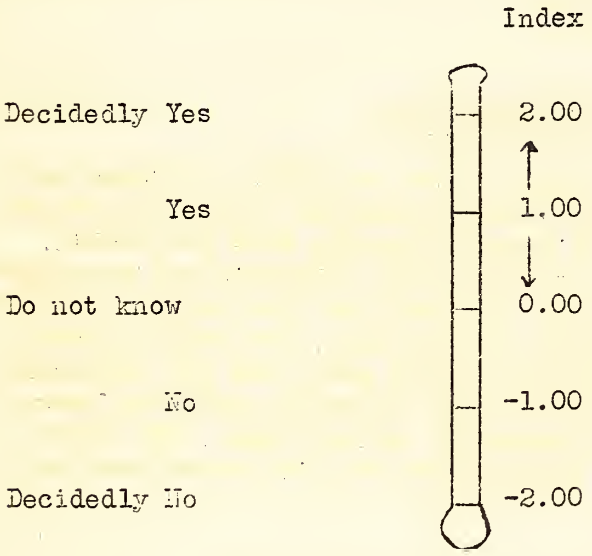


Figure 3. - Change in food attitude

The difference in gain or loss was 0.09 points in favor of the members. The standard error of this difference was 0.04 points; and hence, the critical ratio was 2.3, showing that the difference was reasonably significant statistically.

Table 6. - Comparison of members and equivalent nonmembers on attitude toward the effect on health of eating fruits and vegetables

Groups	Number	Average index: Beginning of project	Average index: End of project	Average change
(1)	(2)	(3)	(4)	(5)
Members............	163	1.45	1.49	0.04
Nonmembers..........	163	1.45	1.40	-.05
Difference in change of the two groups..................				.09
Standard error of the difference......................				.04
Critical ratio - statistical significance of the difference..............................				2.3



The change of 0.04 points is equivalent to 4 percent of the members shifting 1.00 points on the attitude scale, as from 1.00 saying "Yes, eating fruits and vegetables daily helps to make a person healthy" to 2.00 saying "Decidedly yes." The change of 0.05 points is equivalent to 5 percent of the nonmembers shifting 1.00 points as from 1.00 saying "Yes" to 0.00 saying "Do not know" - being uncertain.

Change in Food Habits

The members daily ate more fruits and vegetables at the end of the project than they did at the beginning, while the nonmembers ate less. The members' shift was 0.08 points in a positive direction and nonmembers' 0.22 points in a negative direction. In this case the two groups were made equivalent on their initial index of food habits. The index of daily food habits relating to eating fruits and vegetables of the members and the equivalent group of nonmembers was 3.05. By the end of the project the members' index increased to 3.13 points and the nonmembers' dropped to 2.83 points.

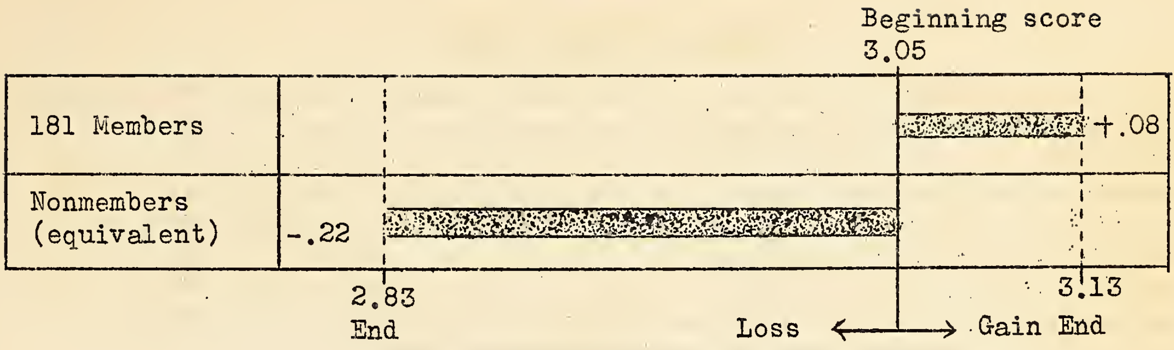
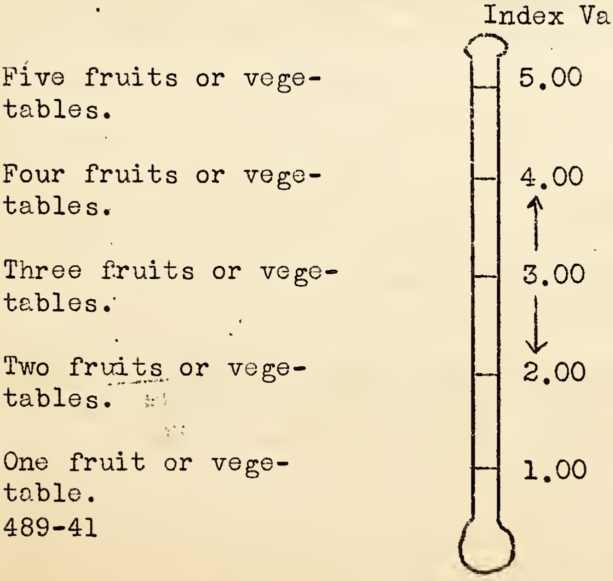


Figure 4. - Change in food habits

The difference in change was 0.30 points in favor of the members. The standard error of this difference was 0.09 points; hence, the critical ratio was 3.3, showing that the difference was statistically significant.

Table 7. - Comparison of members and equivalent nonmembers on food habits relating to the eating of fruits and vegetables

Groups	Number	Average index		Average change
		Beginning of project	End of project	
(1)	(2)	(3)	(4)	(5)
Members................	181	3.05	3.13	0.08
Nonmembers.............	181	3.05	2.83	-.22
Difference in change of the two groups........................				.30
Standard error of the difference..............................				.09
Critical ratio - statistical significance of the difference...				3.3


Index Value
Five fruits or vegetables.
5.00
Four fruits or vegetables.
4.00
Three fruits or vegetables.
3.00
Two fruits or vegetables.
2.00
One fruit or vegetable.
1.00

The change of 0.08 points is equivalent to 8 percent of the members eating three fruits and vegetables daily at the beginning of the project and increasing to four at the end.

The change of 0.22 points is equivalent to 22 percent of the nonmembers eating three fruits and vegetables daily at the beginning and decreasing to two at the end.

Change in School Plans

The members' 6/ desire to continue in school dropped slightly during the period of the project but the nonmembers' dropped still more. In this case the two groups were made equivalent on their initial index of desire to continue in school. At the beginning of the project in April the desire of the member group and the equivalent nonmember group to continue in school is indicated by 2.97 points. An index of 3.00 represents a desire to go 2 years to college. By the end of the project in September the members' index had dropped 0.04 points to 2.93 and the nonmembers' index had dropped 0.14 points to 2.83.

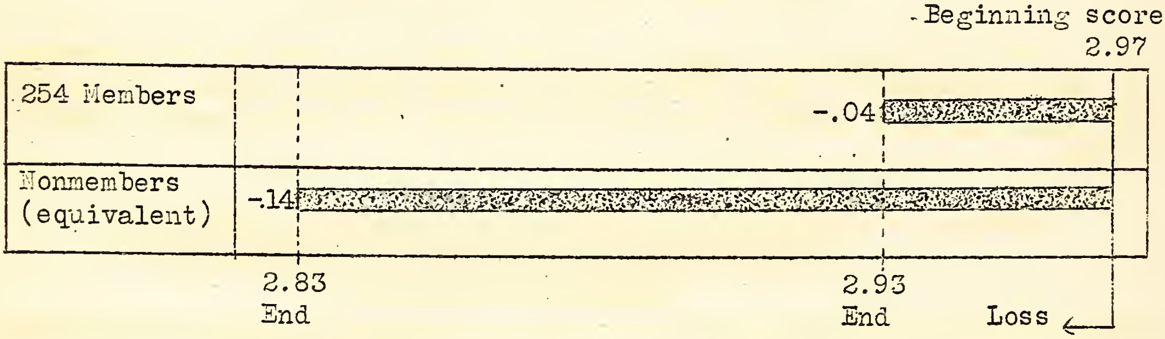


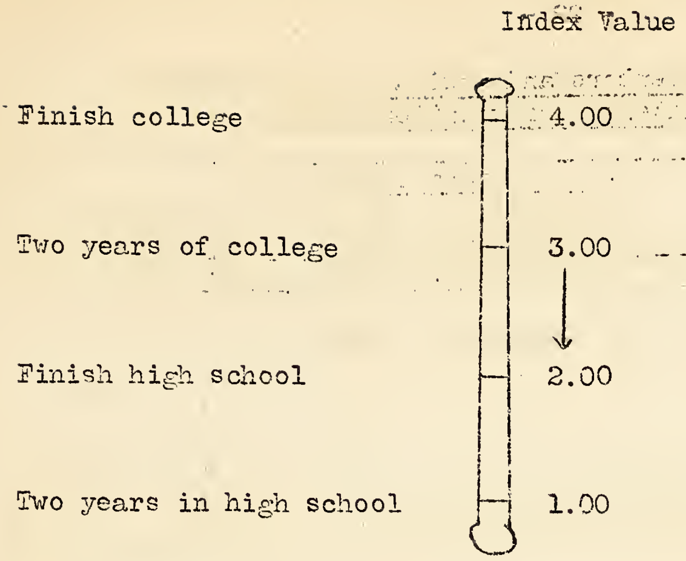
Figure 5. - Change in school plans

The difference in decrease was 0.10 points in favor of the member group. The standard error of this difference was 0.05 points; hence, the critical ratio was 2.0, showing that the difference was just barely statistically significant.

Table 8. - Comparison of members and equivalent nonmembers on desire to continue in school

Groups	Number	Average index: Beginning of project	Average index: End of project	Average change
(1)	(2)	(3)	(4)	(5)
Members	254	2.97	2.93	-0.04
Nonmembers	254	2.97	2.83	-.14
Difference in change of the two groups				.10
Standard error of the difference				.05
Critical ratio - statistical significance of the difference				2.0

6/ The "members" were members of any 4-H Club during the period of the study and the "nonmembers" were not members of any 4-H Club, since this objective is not unique to the vegetable garden project.



The change of 0.04 points is equivalent to 4-percent of the members dropping from an index of 3.00 "desiring to go to college for 2 years" to an index of 2.00 "desiring to finish high school."

The change of 0.14 points is equivalent to 14 percent of the nonmembers dropping from an index of 3.00 to an index of 2.00.

Change in Vocational Plans

At the end of the project in September the members 7/ knew a little more definitely what they wanted to do for a living when they got older. The nonmembers felt much less definitely about their vocational plans in September than they did in April. In this case the two groups were made equivalent on their initial index of definiteness of vocational plans. The index of definiteness in their vocational plans was 3.03 points for each group in April. By September the member group had made a very slight increase of 0.03 points to 3.06. The equivalent group of nonmembers had a large drop of 0.22 points to 2.81.

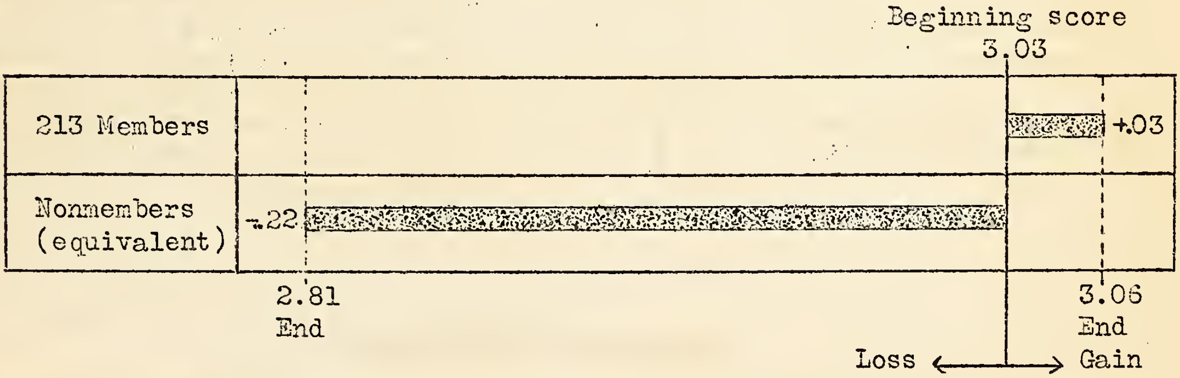


Figure 6. - Change in vocational plans

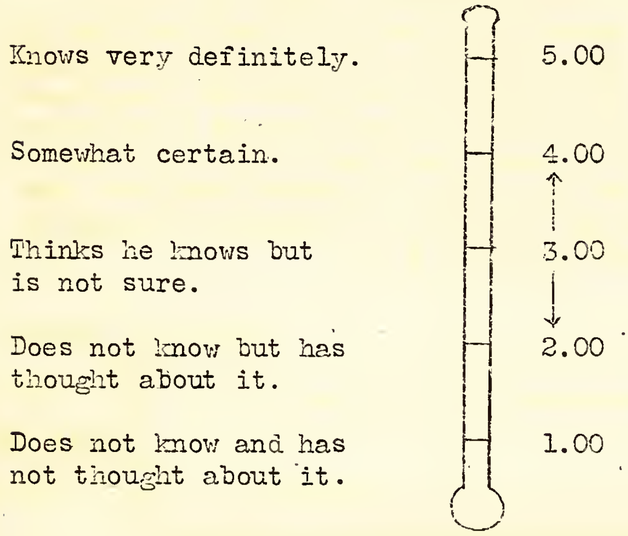
The difference in change was 0.25 points in favor of the members. The standard error of this difference was 0.08 points. The critical ratio was 3.1, showing that the difference was statistically significant.

7/ See footnote 6, page 20.

Table 9. - Comparison of members and equivalent nonmembers on definiteness of vocational plans

Groups	Number	Average index: Beginning of project	Average index: End of project	Average change
(1)	(2)	(3)	(4)	(5)
Members............	213	3.03	3.06	0.03
Nonmembers.........	213	3.03	2.81	-.22
Difference in change of the two groups....................				.25
Standard error of the difference..........................				.08
Critical ratio - statistical significance of the difference..				3.1

Index Value


Knows very definitely.
5.00
Somewhat certain.
4.00
Thinks he knows but is not sure.
3.00
Does not know but has thought about it.
2.00
Does not know and has not thought about it.
1.00

The change of 0.03 points is equivalent to 3 percent of the members shifting from an index of 3.00 "feeling that they know but are not sure" to an index of 4.00 being "somewhat certain."

The change of 0.22 points is equivalent to 22 percent of the nonmembers dropping from an index of 3.00 "thinking that they know but are not sure" to an index of 2.00 "not having any vocational plans but have thought about some plans."

Sidelights of the Study

Members who did not complete their projects lost self-confidence. Thirty-four incomplete members were equated with members who completed the project on their average beginning index of confidence of 3.26 points and the number of years they had participated in a 4-H vegetable garden project which was 1.4 years. The complete members developed self-confidence amounting to 0.22 index points. The incomplete members lost confidence to the amount of 0.41 index points. The difference is equivalent to 63 percent of the members increasing from an index of 3.00 "thinking they can plant and care for a vegetable garden but are not sure how well" to an index of 4.00 "thinking they can do so fairly well."

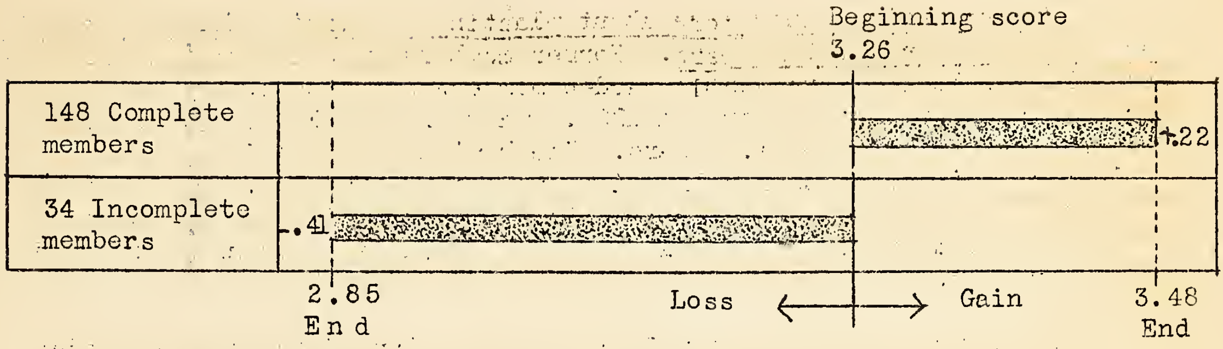


Figure 7. - Comparison of complete and incomplete members in the development of self-confidence

These data, in and of themselves, do not necessarily show cause and effect relationships. It is not known whether they lost confidence because they failed to complete their project or whether they failed to complete because they lost confidence. Further evidence on this point could be obtained from case studies of the incomplete members. However, the data indicate a caution signal, particularly in cases where excessively high standards of completion are insisted upon. More harm may be done to the boys and girls who fail than good to those who succeed. The development of the individual boy or girl is more important than strict adherence to goals beyond the reach of the boy or girl. This does not mean that standards should be abandoned. It does mean that standards should be flexible to permit adaptation to individual boys and girls.

Incomplete members learned as much about vegetable gardening as members who completed. Although the incomplete members lost self-confidence during the period of the project, they gained as much subject-matter information as the equivalent group of completed members. Members who completed were equated with incomplete members on their beginning index score of vegetable-garden knowledge and on the number of years in the 4-H vegetable garden project. The group of 99 completed members having been in a vegetable garden project 1.4 years and having a beginning index score of 53.0 points increased 8.7 points during the project. The group of 31 incomplete members also having been in a vegetable garden project 1.4 years and having a beginning index score of 53.0 points increased 8.9 points during the same period.

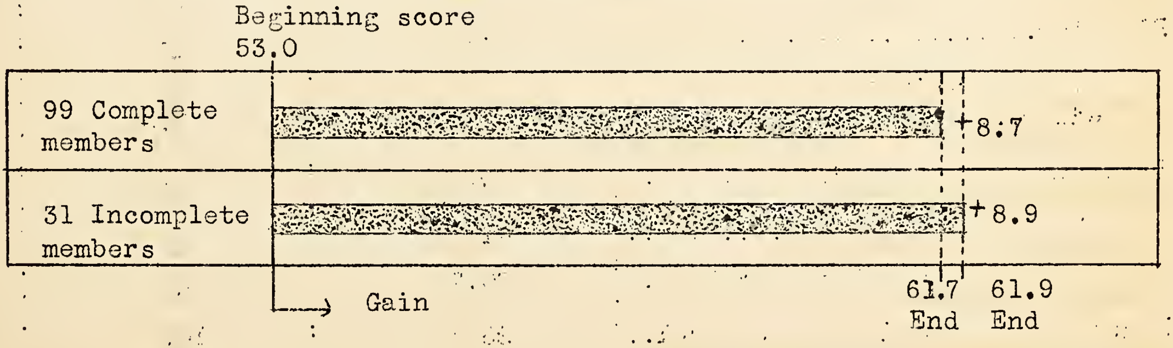


Figure 8. Comparison of complete and incomplete members in growth in subject-matter knowledge

Former members knew more about planting and caring for a vegetable garden than the present members. Former members were a group of individuals who had been 4-H vegetable garden members previous to the 1939 project and who were not members in 1939. They previously have been members for an average period of 1.4 years. The beginning score index of vegetable-garden information for the 21 former members was 63.2 and that for the 181 present members was 59.2. This, of course, is what would be expected if members learned about vegetable gardening during their project experience.

The members knew relatively less about plant diseases and garden insects and their control and gained more than in other types of 4-H vegetable garden information. The questions in each of the eight types of vegetable garden information were analyzed to see if there was a differentiation among these types. In regard to plant diseases and their control the members knew 23.3 percent of the total possible questions at the beginning of the project and their gain was 10.7 percent. Concerning garden insects and their control the members knew 30.7 percent of the total possible questions and their gain was 9.6 percent. These types of information are barely treated in 4-H vegetable garden manual but their importance had been recognized by the Massachusetts 4-H Club staff. Several years ago two supplementary bulletins were specially prepared on these topics for 4-H vegetable garden members.

Information relating to selecting the seed was best known by the members, and the least amount of gain was made in this type of information. The beginning index score of members was 80.6 percent of the total possible score for that type of information and their gain was 3.6 percent.

Table 10. - Comparison of various types of garden information known and gain made by members

Type of garden information	Percentage of total possible score	
	Beginning of project	Gain during project
(1)	(2)	(3)
Selecting the seed................	80.6	3.6
Location of the garden............	68.9	4.2
Planting..........................	61.2	5.7
Cultivating, thinning and weeding.........................	61.0	7.3
Preparing the seedbed.............	56.5	4.3
Marketing and exhibiting..........	41.3	5.9
Garden insects and their control..	30.7	9.6
Plant diseases and their control..	23.3	10.7

Use made of the vegetables grown in their gardens. All the 181 members, of course, had vegetable gardens of their own. Of the 409 nonmembers, 125 (31 percent) had vegetable gardens of their own.

Table 11. - Use made of vegetables grown in members' and nonmembers' gardens

Use	Percentage of 181 members with gardens	Percentage of 409 nonmembers with and without gardens	Percentage of 125 nonmembers with gardens
(1)	(2)	(3)	(4)
Their families canned, preserved or stored for winter use vegetables grown in their gardens...	62	18	58
Sold vegetables grown in their gardens to people outside of their families..................	45	8	27
Did both of the above...........	31	6	20

The families of 62 percent of the 181 members canned, preserved, or stored for winter use vegetables grown in the members' gardens. The families of 18 percent of the 409 nonmembers and of 58 percent of the 125 nonmembers with vegetable gardens did likewise. Forty-five percent of the members sold vegetables grown in their gardens to people outside of their families while 8 percent of the 409 nonmembers and 27 percent of the 125 nonmembers did the same. Thirty-one percent of the members, 6 percent of the 409 nonmembers, and 20 percent of the 125 nonmembers did both. There was considerable difference between the 181 members with gardens and the 409 nonmembers with and without gardens. Even when the member group with gardens is compared with the nonmember group with gardens, a larger proportion of the members contribute to the family winter food supply and the family income through their gardens.

SIGNIFICANCE OF THE STUDY

Evidence of Achievement in the Educational Objectives

In talking with 4-H boys and girls and in observing them from time to time and the changes taking place in them, it becomes clear that their participation in 4-H Club work affects their lives in a wholesome manner. In summary these informal observations indicate that 4-H Club work is a constructive experience from which the members obtain much satisfaction. Comments of parents, local leaders, and extension workers and studies of former members support this conclusion. However, it is not only important to know that the work is worth while, that it is good, and that membership is increasing. It is significant to know how widespread among members the experiences they receive are worth while and in what directions and to what degree. The subjective impressions received need to be balanced with valid and objective measurements of the changes in boys and girls which their club experiences are intended to bring about. The changes are the objectives and outcomes of 4-H Club work. The present study provides evaluation procedures for six educational objectives of 4-H Club work. The units of measurement used in the instruments are sufficiently fine to measure changes in the members in the direction of these objectives under the conditions of 4-H Club work and the 5-month period of the project.

In-Service Training Value

The significance of the vegetable garden study and other studies in progress is not only in making careful objective measurements of the educational growth of boys and girls in the objectives of 4-H Club work. One of their outstanding values is the in-service training aspect which grows out of the thinking involved in planning the study, clarifying the objectives, preparing the tests, the reactions of boys and girls while taking the tests, personal contact with local leaders and school authorities, as well as, analysis of the results of the tests beyond the determination of growth. Question analyses have been made for the State and county club agents which show how well different areas of subject matter are known at the beginning of the project and the gain made during the project. This information is helpful in program revision. In one of the studies the State is planning to use the results as a basis for the preparation of new 4-H Club literature. Through the process of the study new insights are gained and a better understanding of boys and girls is achieved. This value is well illustrated by a remark of a club agent after the study was thought through, the objectives clarified, and the tests prepared, but before the tests were given. She said, "Even if this study were to stop now, it would have been very much worth while to me."

Local Leader Training

Training local leaders of 4-H Clubs in the objectives of 4-H Club work, in methods of teaching and in subject matter is a problem State 4-H Club agents and specialists continually face. The interest of local leaders in the tests and their desire for copies indicate that the tests serve as useful local leader training methods. Evaluation devices help to clarify objectives in terms of the mental, emotional, social and manual behavior of boys and girls. However, practical indirect measurements should be taken as indexes of achievement. The real validity of the behavior goes back to the meaning of the objectives.

Evaluation Instruments Constructed and Available to Others

A fourth value of these studies is that objective instruments have been developed for measuring some objectives in 4-H Club work. Objectives have been made more tangible. If later studies substantiate this conclusion - and thus far there is every indication that they will - then instruments are available to evaluate the effectiveness of teaching methods and procedures, organizational structure, incentives, and other problems in conducting 4-H Club work. The instruments are available to all the States to use as they are, or with modifications to fit special conditions within the States. 4-H Club agents in a State can use the instruments to carry on studies of their own.

Making "Intangible" Objectives More Tangible

By no means a minor outcome of the studies is a clearer understanding of the so-called "intangible" objectives and methods for measuring these objectives. Individuals interested in bringing about these changes in the development of boys and girls should get together, clarify the objectives, work out tentative methods of measurement and try out the methods leading to the improvement of teaching and evaluation procedures. The next series of studies should have its focal point on attitudes, opinions and beliefs relating to healthful living, cooperative action, tolerance, responsibility, farming, homemaking, scientific attitudes, and other civic and democratic attitudes.

VEGETABLE GARDENING

Name________________________________; Date________________

( )Boy; ( )Girl. Age at next birthday__________years.

School you attend____________________; Grade you are in_________

Town___________________________; County____________________

Extension Services of the United States Department of Agriculture
and the Massachusetts State College cooperating. 1939.

Part 1.

What to do: Below and on the following pages are some unfinished sentences. Each sentence may be finished by one or more of the words or phrases below that sentence. You are to place a check (✓) in the parentheses before those words or phrases which you think finish the sentence correctly. The following example shows you how to do it:

Example: Some garden vegetables are:

(✓)a. beans
(✓)b. carrots
( )c. dahlias
( )d. roses
(✓)e. tomatoes
( )f. tulips

Notice that "a", "b", and "e" finish the sentence correctly because beans, carrots and tomatoes are vegetables. Therefore, all three are checked. "c", "d" and "f" are not checked because dahlias, roses and tulips are flowers.

For each of the following unfinished sentences, one or more of the answers may be checked to finish the sentence correctly. To finish some sentences correctly you may wish to check all of the answers.

1. In getting the ground ready for a vegetable garden:

( )a. any loose large stones should be picked off.

( )b. commercial fertilizer should be put on the soil after you plow or spade.

( )c. the ground should be plowed or spaded 6 to 8 inches deep.

2. Weeds:

( )a. do very little damage to the garden.

( )b. should be allowed to go to seed.

( )c. keep the plants from growing.

( )d. use water needed by the plants.

( )e. choke out the plants.

3. It is usually better to locate a garden near the house:

   ( )a. because it will be handier to cultivate and harvest.

   ( )b. because the plants will grow better.

   ( )c. because there will be less chance of theft.

4. Lime:

   ( )a. if used on potato soil will cause scab on potatoes.

   ( )b. will be of special benefit to heavy clay soil.

   ( )c. if used on the soil makes the soil less acid.

   ( )d. is a complete fertilizer.

   ( )e. in some form can be used in certain dusts for control of insects.

5. If you wanted to get some soil from your garden to have the soil tested:

   ( )a. samples of the soil should be taken from different parts of your garden.

   ( )b. a sample of soil should be taken from only one part of your garden.

   ( )c. soil should be taken to a depth of about 6 to 8 inches.

   ( )d. soil should be taken to a depth of not more than 3 inches.

6. In preparing the seed bed you should rake the soil and break up the lumps:

   ( )a. to mix the fertilizer with the soil.

   ( )b. to improve the moisture conditions in the soil.

   ( )c. because seeds will grow better in fine soil.

7. Check the important things you should think about in planting your garden:

   ( )a. the kind and variety of plants you want.

   ( )b. the amount of seed or plants to buy.

   ( )c. the time of year to plant the seeds or plants.

   ( )d. the distance between the rows.

   ( )e. the distance between the plants.

   ( )f. the depth of planting.

   ( )g. the time necessary between planting and harvesting.

8. Check the best ways to select and buy good seed:

   ( )a. always buy the cheapest seed.

   ( )b. buy seed from a reliable seed company.

   ( )c. buy tested seed.

9. Massachusetts State College recommends certain varieties (kinds) of garden plants: (check only one here)

( )a. because the large seed companies have recommended these varieties to the State College.

( )b. because seeds of these varieties are cheap to buy.

( )c. because the agricultural experiment station has tried these varieties and found them to do well in Massachusetts.

10. Check those of the following which are good planting practices:

( )a. plant early enough so that the vegetables will be harvested before frost.

( )b. when one kind of early vegetable has been harvested, plant another kind in its place.

( )c. plant all of your vegetables at the same time.

( )d. make several plantings of the same vegetables at different dates.

( )e. plant some kinds of vegetables early in the season and other kinds later in the season.

11. Check the good planting practices:

( )a. tomatoes should be the first vegetable to set out in the garden.

( )b. more seed should be planted than is required.

( )c. thin out extra plants to prevent crowding.

( )d. plants should be transplanted when the sun is good and hot.

12. Check the good planting practices:

( )a. seeds should be planted when the soil is very wet.

( )b. turnips are generally transplanted from the hot bed.

( )c. carrot seed should be planted about 1 inch deep.

( )d. tall peas should always be supported by bush or wire.

13. Cultivating your garden:

( )a. will save needed moisture.

( )b. 4 inches deep is better than 2 inches deep.

( )c. will keep down the weeds.

( )d. should begin before the plants get above the ground.

14. Check the plants which are usually thinned:

( )a. beets
( )b. carrots
( )c. onions
( )d. peas
( )e. potatoes
( )f. string beans.

15. In the fall of the year the dead vines and tops of plants:

( )a. should be left on the garden to add humus to the soil.

( )b. should be left on the garden as fertilizer.

( )c. should be raked together and burned.

16. Check ways which can be used to control plant diseases or insect pests:

( )a. dust or spray the plants with fungicide.

( )b. spray the plants with insect poison.

( )c. rotate the crops.

( )d. keep your garden well-watered.

( )e. treat the seed before planting.

17. Plants should be dusted to get rid of disease:

( )a. when the plants are dry.

( )b. when the plants are damp.

( )c. in the cool of the morning.

( )d. in the heat of the day.

( )e. on a windy day.

18. Check those insects which have chewing mouth parts:

( )a. Colorado potato beetle.

( )b. Mexican bean beetle.

( )c. Pea aphis.

( )d. Plant lice.

( )e. Squash bugs.

( )f. Wire worms.

19. The spread of sucking insects can be controlled with:

( )a. Black leaf 40.

( )b. Bordeaux mixture.

( )c. calcium arsenate.

( )d. nicotine sulfate.

( )e. Rotenone.

20. The spread of chewing insects can be controlled with:

( )a. arsenate of lead.

( )b. calcium arsenate.

( )c. corrosive sublimate.

( )d. nicotine sulfate.

( )e. Paris green.

21. Vegetables which will usually bring higher prices and which are best for exhibiting are:

( )a. large-sized vegetables.

( )b. vegetables of the same size, shape and color.

( )c. vegetables of different sizes, shapes and color for variety.

( )d. clean vegetables.

( )e. vegetables with some soil on them to make them look more natural.

Part 2

22. How do you feel about your ability to plant a vegetable garden and take care of it? Read the five sentences below and check the one which best tells how you feel about your ability to plant and care for a garden.

( )a. I don't know how well I can do it and am a little afraid to try.

( )b. I don't know how well I can do it but am willing to try.

( )c. I think I can do it but I am not sure how well.

( )d. I think I can do it fairly well.

( )e. I know I can do it very well.

23. If you were asked to talk next month to a group of 10-year-old boys who are beginners in a 4-H Club vegetable garden project, on this topic - "How to raise a vegetable garden", how would you feel about it?

Check one or more of the sentences which tell how you would feel.

I couldn't do it:

( )a. because I would be too scared.

( )b. because I would not know enough about vegetable gardening.

( )c. because I would not explain well enough what I know about vegetable gardening.

I would do it:

( )d. if I knew enough about vegetable gardening.

( )e. if I could explain well enough what I know about vegetable gardening.

( )f. even though I would be a little scared.

( )g. because it would be fun.

( )h. because I know enough about vegetable gardening to make the talk.

( )i. because I could explain it well enough.

Part 3

24. How long do you plan to go to school? (✓)Check only one.

( )a. I want to go two years to high school.

( )b. I want to finish high school.

( )c. I want to go two years to college.

( )d. I want to finish college.

25. What other education plans do you have?______________________________

____.

26. Have you changed your mind since last spring about the length of time you plan to stay in school?

( )Yes; ( )No; ( )Don't remember.

27. If you have changed your mind, what caused you to? ____________________

____

Part 4

28. Do you have in mind what you plan to do for a living (your occupation) when you get older? (Check only one).

( )a. I don't know, and I have not thought about it.

( )b. I don't know, although I have thought about it.

( )c. I think I know but am not sure.

( )d. Somewhat certain.

( )e. Very definite.

29. If you have what is it? ____

____

Part 5

30. Check those of the following which you usually eat daily.

( )a. One serving of potatoes.

( )b. One serving of citrus fruit, tomatoes or raw cabbage.

( )c. One serving of green-colored or yellow-colored vegetables.

( )d. Two servings of other fruits or vegetables.

31. Do you believe that eating plenty of fruits and vegetables daily helps to make a person healthy?

( )Decidedly Yes; ( )Yes; ( )Don't know; ( )No; ( )Decidedly No.

Part 6

32. Were you a member of a 4-H Vegetable-Garden Club this past summer?

( )Yes; ( )No.

33. How many years have you been a member of a 4-H Vegetable-Garden Club (include this year if you were a member of a 4-H Vegetable-Garden Club this year)?_______years.

34. Were you a member of any 4-H Club this past summer? ( )Yes; ( )No.

35. How many years have you been a member of any 4-H Club (include this year if you were a member of a 4-H Club this year)? _______years.

Part 7

36. Did you work in a vegetable garden this past summer?

a. Have a garden of your own? ( )Yes; ( )No.

b. Work in your father's garden? ( )Yes; ( )No.

c. Work in a garden for someone else? ( )Yes; ( )No.

37. Did you study anything about vegetable gardening this past summer?

a. In books or magazines? ( )Yes; ( )No.

b. In 4-H Club leaflets, extension bulletins or U. S. Department of Agriculture bulletins? ( )Yes; ( )No.

c. In the newspapers? ( )Yes; ( )No.

d. From garden talks or lectures? ( )Yes; ( )No.

e. From parents or friends? ( )Yes; ( )No.

Part 8

38. How much of the vegetables grown in your garden did your family use (eat and can)?

( )All or almost all; ( )About 3/4; ( )About 1/2; ( )About 1/4;

( )None or almost none.

39. Were some of the vegetables grown in your garden canned, preserved, or stored for winter use by your family? ( )Yes; ( )No.

40. Did you sell any of the vegetables grown in your garden to people outside of your family? ( )Yes; ( )No.